REMARKS/ARGUMENTS

The Office Action

Claims 1-3, 7-12, 15-17 and 19 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,614,799 to Gummalla, et al. Claims 4 and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Gummalla. Claims 5, 6, 13, 14 and 18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Gummalla in view of U.S. Patent No. 6,215,792 to Abi-Nassif.

Status of the Claims

Claims 1, 2, 7-10, 12, 15-17, and 19 remain in this application. Claims 1, 4, 7, 10, 12 and 17 have been amended to more clearly define the invention. Support for the claim amendments may be found throughout the specification and in the drawings (see, for example, FIGS. 4-6 and the accompanying description in the specification).

Claims 1, 2, 7-10, 12, 15-17, and 19 Are Patentably Distinguishable Over The Cited Art

The present invention provides a method and system for data collision resolution wherein the same back-off window is sent to a plurality of remote users and is recalculated to maintain a constant collision rate and thereby increase throughput. The collision rate of the network is estimated in the present invention by detecting collisions in reservation slots, and the size of the back-off window and is adjusted to maintain a collision rate of approximately 1-2/e.

Independent claims 1, 10 and 17, as amended, relate to the new fixed collision rate (FCR) algorithm in which the same back-off window is sent is sent to *each* of a plurality of users in a shared network. This means that *every* user will have the same chance of obtaining network resources regardless of how many times the user's data has previously collided. FCR thus shares the network resources in a fair way and, at the same time, avoids the capture affect found in prior art algorithms, such as binary exponential back-off (BEB).

The system suitable for implementing this FCR algorithm is shown in FIG. 1. In particular, the wireless internet access system 10 includes an axis point 12 in communication with a plurality of devices 14. A communication link 16 couples the

devices 16 to the axis point 12. A collision resolution device 30 determines whether a collision has occurred and is responsible for calculating back-off windows. The resolution device 30 sends the back-off windows through the axis point 12, and the axis point 12 sends the back-off windows to *all* of the remote devices 14 over the link 16.

To anticipate a claim, the 35 U.S.C. § 102 reference must teach every element of the claim. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir.1987), MPEP § 2131. The prior art reference cited by the Examiner, Gummalla, fails to anticipate each and every element as set forth in the claims.

For example, Gummalla discloses a technique for dynamically adjusting modem back-off parameters in a cable modem network. Gummalla, however, fails to disclose estimating a collision rate over a history length of reservation, wherein the history length of reservation is four reservation slots. As noted in Gummalla in column 6, lines 8-14, each upstream channel includes two sub-channels: a "contention" sub-channel (Initial Ranging Slot and Bandwidth-Request Minislot) used by any cable modem and a "reservation" sub-channel comprising mini-slots allocated to specific cable modems. Gummalla is concerned with determining the proper internal back-off window at the cable modem for access-delay/throughput performance in the contention channel. (See column 7, lines 21-24.) Gummalla does not mention a specific history length of reservation such as four reservation slots that is unchanging. Indeed, each cable modem independently determines its own random "back-off value" or reservation slot. (See column 10, line 62 to column 11, line 3.) Once a random back-off value has been selected from a possible range, the modem will attempt to retransmit to the CMTS after it has deferred a number of contention slots equal to the selected random back-off value. (See column 11, lines 21-38.) This is in direct contrast to the method and system disclosed in the present application and presented in claims 1, 10, and 17, as amended.

In addition, Gummalla fails to disclose calculating the back-off window to maintain a collision rate of approximately 1-2/e. Arguably, Abi-Nassif discloses that the probability of garbled outcomes may be very small, such as 0.3, which means that the system is likely to be operating in the underload region. As such, Abi-Nassif

would then *decrease* the backoff window size. (See column 8, lines 41-44.) This is not the same as *maintaining* a substantially constant collision rate of approximately 1-2/e.

Furthermore, although Gummalla calculates back-off windows, it does not send the same back-off window to each of the users in the network as in the present invention. This conclusion is supported by the background section of Gummalla at column 7, lines 41-56, wherein it is stated that:

> *There is no single, fixed back-off window value that works well for all upstream contention load scenarios.* It is desirable, therefore, for the CMTS to incorporate an intelligent technique to estimate how many modems are currently involved in the collision resolution process, and to dynamically adjust the back-off window parameters (in the channel MAPs) accordingly. (Emphasis added.)

Thus, Gummalla teaches that "[e]ach modem chooses its back-off value from a window of back-off parameters, specified by the CMTS. . . . Because the number of cable modems associated with a particular cable channel may vary considerably, each cable channel[i] has its own associated BS[i} and BE[i} parameters." (Col. 11, lines 4-12.) As such, Gummalla fails to teach or suggest the feature of sending the same back-off window to each of the plurality of users in the network.

For at least these reasons, claim 1 (and claims 2 and 7-9), claim 10 (and claims 12, 15, and 16) and claim 17 (and claim 19) are patentably distinguishable over the cited art.

CONCLUSION

For at least the reasons detailed above, it is respectfully submitted all claims remaining in the application (Claims 1, 2, 7-10, 12, 15-17, and 19) are now in condition for allowance. The foregoing comments do not require unnecessary additional search or examination.

In the event the Examiner considers personal contact advantageous to the disposition of this case, he/she is hereby authorized to telephone John S. Zanghi, at (216) 861-5582.

Respectfully submitted,

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10/2/06
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